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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/549,279	04/14/2000	Masaki Ichihara	P/2291-85	9019

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Ostrelenk Faber Gerb & Soffen LLP
1180 Avenue of the Americas
New York, NY 10036-8403

EXAMINER

CHANG, EDITH M

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 08/27/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/549,279

Applicant(s)

ICHIHARA, MASAKI

Examiner

Edith M Yeh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6 and 12-14 is/are rejected.
- 7) ☒ Claim(s) 3 and 7-11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,4,5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Bergamo (US Patent 6104708).

Regarding **claims 1 & 13**, Bergamo discloses a digital circuit and its method for shifting a frequency band of a signal vector to a predetermined frequency band (IF INPUT FIG.6, column 8 lines 46-50), wherein the signal vector is determined by a pair of I and Q component on I-Q plane (column 8 lines 25-35), comprising: a control data generator for generating control data from a frequency difference between the frequency band and the predetermined frequency band (87-89 FIG.6); and a signal vector rotator for rotating the signal vector on the I-Q plane by an angle determined depending on the control data to produce an output signal vector in the predetermined frequency band (91 FIG.6).

Regarding **claim 2**, further Bergamo discloses an analog-to-digital converter for converting a received analog signal vector to the signal vector (71 FIG.6); a phase data generator for generating phase data (87 FIG.6); and a converter for converting the phase data to the control data consisting of a plurality of bits (89 FIG.6, column 8 line 63-column 9 line 10).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bergamo (US Patent 6104708) in view of Cochran (US Patent 6151368).

Regarding **claim 4**, further Cochran teaches the phase data (70 FIG.5) generated by computing an integral multiple of a unit angle which is obtained from a frequency shift (68, 96 FIG.5). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the phase generator taught by Cochran in Bergamo's circuit to reduce the influence of phase noise (column 1 lines 5-10).

5. Claims 5-6, 12, & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergamo (US Patent 6104708) in view of Porrot (US Patent 4737724).

Regarding **claims 5 & 14**, except the band-pass filter, Bergamo discloses all subject matter claimed: a digital circuit and its method for shifting a plurality of frequency bands of input signal vectors (Abstract, FIG.6) comprising: an analog-to-digital converter for converting a received analog signal vector to the signal vector (71 FIG.6); a control data generator for generating control data from a frequency difference between each of the plurality of frequency band and the predetermined frequency band (87-89 FIG.6); a signal vector rotator for rotating the signal vector on the I-Q plane by an angle determined depending on the control data to produce an output signal vector in the predetermined frequency band (91 FIG.6) to each of the frequency

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bands. *However* Porrot teaches the band pass filter for receiving the output of the signal vector rotator and passing an output signal vector of the predetermined center frequency band (40 Fig. 6, 60/70 Fig.6A, column 5 lines 60-65). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the band-pass filter taught by Porrot in Bergamo's phase rotator to eliminate the out-of-band energy and for efficient phase-shifting (Abstract).

Regarding **claim 6**, further Bergamo discloses a phase data generator (87 FIG.6) for generating phase data from the frequency difference in synchronization (79-preamble samples FIG.6); and a converter for converting the phase data to the control data consisting of a plurality of control bits (89 FIG.6, 53 FIG.3 wherein the control bits are UW).

Regarding **claim 12**, except the band-pass filter, Bergamo discloses a digital demodulator for use in a CDMA communication system (column 3 lines 44-46, FIG.6; column 4 lines 37-45), for shifting two carrier bands of input signal vectors determined by a pair of I and Q on I-Q plane to a center carrier band to produce an output signal vector for each carrier band, comprising: a quadrature frequency converter for converting a received high frequency signal to analog signal vectors having I and Q components (column 8 lines 46-49, FIGS.9-12); an analog-to-digital converter for converting a received analog signal vector to the signal vector (71 FIG.6); a control data generator for generating control data from a frequency difference between each of the plurality of frequency band and the predetermined frequency band (87-89 FIG.6); a signal vector rotator for rotating the signal vector θ in the I-Q plane by an angle determined depending on the control data to produce an output signal vector in the predetermined frequency band (91 FIG.6). *However* Porrot teaches the band-pass filter for receiving the output of the signal vector rotator and passing an output signal vector of the predetermined center frequency band (32 Fig

21). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the band-pass filter taught by Porrot in Bergamo's phase rotator to eliminate the out-of-band energy and for efficient phase-shifting.

Allowable Subject Matter

6. Claims 3, 7-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 703-305-3416. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4800.

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Edith Chang
August 12, 2003



STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600